

=> d his

(FILE 'HOME' ENTERED AT 20:53:42 ON 01 FEB 2008)  
FILE 'CA' ENTERED AT 20:54:07 ON 01 FEB 2008  
L1 642 S (VALIDAT? OR FAULT OR CORRUPT?) (6A) (SENSOR OR DETECTOR OR ELECTRODE  
OR MICROELECTRODE OR BIOSENS? OR BIO SENS? OR ANALY!ER OR  
BIOELECTRODE OR BIOANALY!ER OR BIOMICROELECTRODE) (6A) (DETECT? OR  
DETERMIN? OR TEST? OR ASSAY? OR MEASUR? OR MONITOR? OR EVALUAT? OR  
DISCERN?)  
L2 25 S L1 AND (AC OR (ALTERNATING OR A OR OSCILLATING OR MODULAT?) (1W)  
(CURRENT OR C) (2A) (IMPED? OR POLAR? OR VOLTAM? OR COMPONENT OR  
RESPONSE OR SIGNAL OR POTENT? OR CONDUCT? OR RESISTI?) OR KHZ OR MHZ  
OR KILOHERTZ OR MEGAHERTZ OR (KILO OR MEGA) (W) (HERTZ OR HZ) OR  
FREQUENCY)  
L3 17 S L1 AND (AC OR (ALTERNATING OR A OR OSCILLATING OR MODULAT?) (1W)  
(CURRENT OR C) OR KHZ OR MHZ OR KILOHERTZ OR MEGAHERTZ OR (KILO OR  
MEGA) (W) (HERTZ OR HZ))  
L4 36 S L2-3  
L5 24 S L4 AND PY<2004  
L6 4 S L4 AND PATENT/DT  
FILE 'BIOSIS' ENTERED AT 20:55:42 ON 01 FEB 2008  
L7 5 S L5  
FILE 'MEDLINE' ENTERED AT 20:56:11 ON 01 FEB 2008  
L8 10 S L5  
FILE 'CA, BIOSIS, MEDLINE' ENTERED AT 20:57:07 ON 01 FEB 2008  
L9 34 DUP REM L5 L6 L7 L8 (9 DUPLICATES REMOVED)

=> d bib,ab 19 1-34

L9 ANSWER 14 OF 34 CA COPYRIGHT 2008 ACS on STN  
AN 132:95184 CA  
TI Sensor Fault Detection Using Noise Analysis  
AU Ying, Chao-Ming; Joseph, Babu  
CS Department of Chemical Engineering, Washington University, St. Louis,  
MO, 63130, USA  
SO Industrial & Engineering Chemistry Research (2000), 39(2), 396-407  
AB The feasibility of sensor fault detection using noise anal. is  
evaluated. The noise powers at various frequency bands present in the  
sensor output are calcd. using power spectrum d. estn. and compared with  
historically established noise pattern to identify any abnormalities.  
The method is applicable to systems for which the noise is stationary  
under normal operating conditions. Principal component anal. (PCA) is  
used to reduce the space of secondary variables derived from the power  
spectrum. T2 statistics is used to detect deviations from the norm. We  
take advantage of the low-pass filtering characteristics exhibited by  
most process plants and closed-loop control systems, which allows the  
noise power at higher frequency bands to be used in the fault detection.  
The algorithm does not require a process model because it focuses on  
characterization of each individual sensor and the measurement it  
generates. Exptl. studies with two kinds of garden variety sensors (off  
the shelf temp. and pressure sensors) are used to validate the  
feasibility of the proposed approach.

L9 ANSWER 19 OF 34 CA COPYRIGHT 2008 ACS on STN  
AN 128:103928 CA  
TI Sensor Fault Detection via Multiscale Analysis and Nonparametric  
Statistical Inference  
AU Luo, Rongfu; Misra, Manish; Qin, S. Joe; Barton, Randall; Himmelblau,  
David M.  
CS Department of Chemical Engineering, University of Texas, Austin, TX,  
78712, USA  
SO Industrial & Engineering Chemistry Research (1998), 37(3), 1024-1032  
AB Sensor validation is a topic of widespread importance. A new approach  
to sensor validation in real time is described that is based on (1)  
representation of the sensor signal by wavelets, (2) decompn. of the  
signal into different frequency ranges, (3) calcn. of useful features of  
the signal at different frequencies, and (4) diagnosis of faulty  
operation via nonparametric statistical tests. The proposed strategy is  
able to isolate the effect of noise and process changes from the effects  
of phys. changes in the sensor itself. To clarify the circumstances  
under which the above strategy could be used, a noisy signal from a  
simulated thermocouple in a dynamic continuous nonlinear unsteady state  
stirred tank reactor (CSTR) was analyzed. Faults were introduced into  
the thermocouple, and the diagnosis was carried out. The results of the  
diagnosis indicated that the proposed strategy had low type I (false  
alarm) and type II (failure to detect faults) errors and was distinctly  
better than a std. test for changes in a nonstationary signal of unknown  
characteristics.

L9 ANSWER 33 OF 34 CA COPYRIGHT 2008 ACS on STN  
AN 77:85298 CA  
OREF 77:14057a,14060a  
TI Fault sensing instrumentation  
IN Blackmer, David E.  
PA Instrumentation Laboratory, Inc.  
SO U.S., 7 pp.  
PI US 3661748 A 19720509 US 1970-27197 19700407  
PRAI US 1970-27197 A 19700407  
AB The electrochem. sensor system (to sense pH, pO<sub>2</sub>, and pCO<sub>2</sub> values in  
blood samples) includes an electrode system for disposition in a  
conducting fluid that is arranged to produce a dc signal as a function  
of a parameter of interest sensed by the electrode system. There is dc  
circuitry responsive to the dc signal from the electrode system for  
producing an output indicative of the parameter of interest sensed by  
the electrode system. The system for detecting a sensor fault consists  
of a means for providing an elec. connection to the conducting fluid,  
means to apply an ac signal to the elec. connection, an ac signal  
detector connected to the dc circuitry, and a threshold circuit  
responsive to the output of the ac signal detector for providing an  
output signal indicative of a fault in the electrochem. sensor system  
when the ac signal detector has an output that differs by a predetd.  
amt. from a normal value.

=> log y

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